



Proposed Code Change  
State Form 41186R

RETURN TO:  
INDIANA DEPARTMENT OF HOMELAND SECURITY  
CODE SERVICES SECTION  
302 W. Washington Street Room W246  
Indianapolis, IN 46204

FOR OFFICE USE ONLY

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Code 52.3.15-09

INSTRUCTIONS:

Only TYPED copy accepted.

(KEY – Dashed line through material to be deleted, underline material to be added)

Use second sheet for any material requiring more space.

Code Title <b>International Residential Code</b>		Edition 2009
Section number and title <b>N1105</b>		Page 2
Proponent Carolyn Schleif	Title President, Nightingale Designs, Inc.	
Address 10517 Hyde Park, Carmel, IN 46032		Phone (317) 580-0540
PROPOSED CODE CHANGE (Check One)		
<input type="checkbox"/> Change to read as follows <b>X</b> <input checked="" type="checkbox"/> Add to read as follows <input type="checkbox"/> Delete and substitute as follows <input type="checkbox"/> Delete without substitution		
<p>ADD: This is Section 405 in IECC 2009 which is missing from Chapter 11, and renumber to become N1105 in our IRC.</p>		
REASON AND FISCAL IMPACT		
<p>For those who want to market energy efficiency at a higher level, this section sets forth the methodology and procedures for complying with the code using performance based comprehensive computer modeling. Typically this methodology yields even greater energy savings/ operating costs than the prescriptive method we have in Chapter 11 so far. Without this section, we will not be able to match the IECC because the energy savings are far greater than prescriptive methods.</p> <p>It is not required to be used by all, but is an alternate way to conform with the 2009 IECC for those wanting to use LEED or performance based design.</p> <p>Fiscal impact – none. This is voluntary, and typically client-driven.</p>		
REVIEW RECOMMENDATION		
Approve		
Disapprove		
Approve as amended		
Further Study		

**SECTION 405**  
**SIMULATED PERFORMANCE ALTERNATIVE**  
**(Performance)**

**405.1 Scope.** This section establishes criteria for compliance using simulated energy performance analysis. Such analysis shall include heating, cooling, and service water heating energy only.

**405.2 Mandatory requirements.** Compliance with this section requires that the mandatory provisions identified in Section 401.2 be met. All supply and return ducts not completely inside the *building thermal envelope* shall be insulated to a minimum of R-6.

**405.3 Performance-based compliance.** Compliance based on simulated energy performance requires that a proposed residence (*proposed design*) be shown to have an annual energy cost that is less than or equal to the annual energy cost of the *standard reference design*. Energy prices shall be taken from a source *approved* by the *code official*, such as the Department of Energy, Energy Information Administration's *State Energy Price and Expenditure Report*. *Code officials* shall be permitted to require time-of-use pricing in energy cost calculations.

**Exception:** The energy use based on source energy expressed in Btu or Btu per square foot of *conditioned floor area* shall be permitted to be substituted for the energy cost. The source energy multiplier for electricity shall be 3.16. The source energy multiplier for fuels other than electricity shall be 1.1.

**405.4 Documentation.**

**405.4.1 Compliance software tools.** Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the *code official*.

**405.4.2 Compliance report.** Compliance software tools shall generate a report that documents that the *proposed design* complies with Section 405.3. The compliance documentation shall include the following information:

1. Address or other identification of the residence;
2. An inspection checklist documenting the building component characteristics of the *proposed design* as listed in Table 405.5.2(1). The inspection checklist shall show results for both the *standard reference design* and the *proposed design*, and shall document all inputs entered by the user necessary to reproduce the results;
3. Name of individual completing the compliance report; and

4. Name and version of the compliance software tool.

**Exception:** Multiple orientations. When an otherwise identical building model is offered in multiple orientations, compliance for any orientation shall be permitted by documenting that the building meets the performance requirements in each of the four cardinal (north, east, south and west) orientations.

**405.4.3 Additional documentation.** The *code official* shall be permitted to require the following documents:

1. Documentation of the building component characteristics of the *standard reference design*.
2. A certification signed by the builder providing the building component characteristics of the *proposed design* as given in Table 405.5.2(1).
3. Documentation of the actual values used in the software calculations for the *proposed design*.

#### 405.5 Calculation procedure.

**405.5.1 General.** Except as specified by this section, the *standard reference design* and *proposed design* shall be configured and analyzed using identical methods and techniques.

**405.5.2 Residence specifications.** The *standard reference design* and *proposed design* shall be configured and analyzed as specified by Table 405.5.2(1). Table 405.5.2(1) shall include by reference all notes contained in Table 402.1.1.

#### 405.6 Calculation software tools.

**405.6.1 Minimum capabilities.** Calculation procedures used to comply with this section shall be software tools capable of calculating the annual energy consumption of all building elements that differ between the *standard reference design* and the *proposed design* and shall include the following capabilities:

1. Computer generation of the *standard reference design* using only the input for the *proposed design*. The calculation procedure shall not allow the user to directly modify the building component characteristics of the *standard reference design*.
2. Calculation of whole-building (as a single *zone*) sizing for the heating and cooling equipment in the *standard reference design* residence in accordance with Section M1401.3 of the *International Residential Code*.
3. Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating and air-conditioning equipment based on climate and equipment sizing.
4. Printed *code official* inspection checklist listing each of the *proposed design* component characteristics from Table 405.5.2(1) determined by the analysis to provide compliance, along with their respective performance ratings (e.g., *R*-value, *U*-factor, SHGC, HSPF, AFUE, SEER, EF, etc.).

**405.6.2 Specific approval.** Performance analysis tools meeting the applicable sections of Section 405 shall be permitted to be *approved*. Tools are permitted to be *approved* based on meeting a specified threshold for a jurisdiction. The *code official* shall be permitted to approve tools for a specified application or limited scope.

**405.6.3 Input values.** When calculations require input values not specified by Sections 402, 403, 404 and 405, those input values shall be taken from an *approved* source.

